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ROBERT A. HARDT

President, American Pharmaceutical Manufacturers' Association

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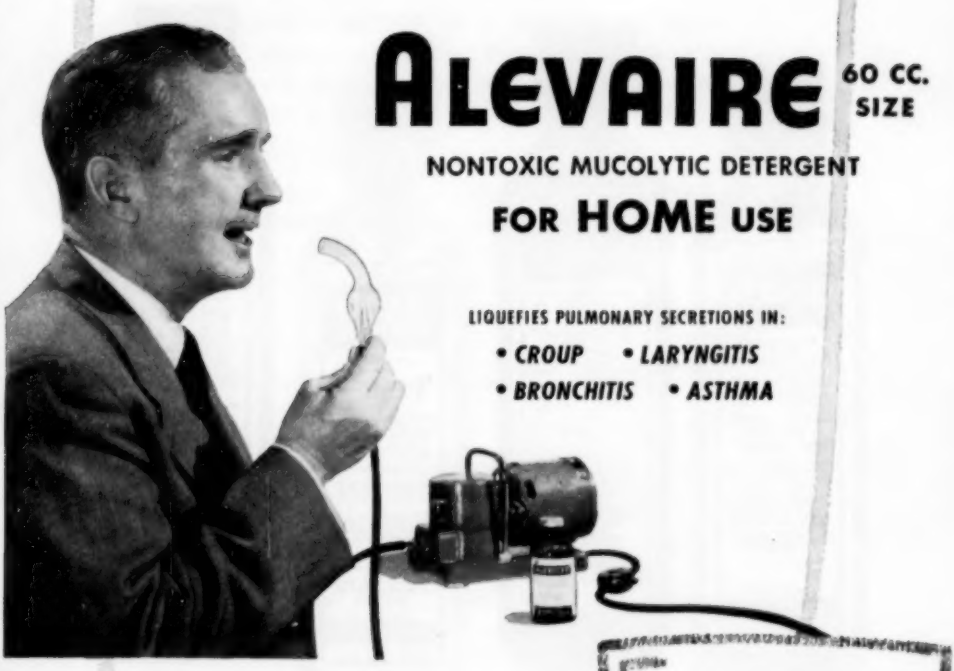

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EDITORIAL

OVER THE COUNTER OR ON PRESCRIPTION?

A disturbing trend seems to have developed in the attitude taken by certain companies and others concerning what should be sold over the counter. Most of us over the years have been somewhat arch-conservative and not unlike what might be expected of the American Medical Association in our attitude concerning self-medication. Whether the Durham-Humphrey Amendment is responsible for this seeming change of attitude on the part of some, we cannot say, but certain developments have taken place which, a few years ago, would have seemed entirely unbelievable.

As a case in point, we might cite a product recently approved for over-the-counter sale which contains phenobarbital, theophylline, and ephedrine. While it may be true that the ephedrine tends to offset the hypnotic effect of the phenobarbital, we have serious doubts that any such potent drug mixture should be readily purchased without a prescription by the layman. It is almost certain that it is impossible to prepare a combination of hypnotic drugs with central nervous stimulants wherein the effects are properly balanced for every patient who may take such a combination. As is well-known, the barbiturates themselves do not invariably act as hypnotics and may, in fact, in small doses cause stimulation in some patients. Furthermore, anyone who has had personal experience with ephedrine must surely recognize that it is an extremely potent substance and not one which is without the capacity to do considerable harm in certain patients.

In releasing such a combination for over-the-counter sale without a prescription, an anomalous situation is set up. If a physician were to write a prescription for this same combination, the pharmacist would not be permitted to refill the prescription without authorization and, yet, he could sell the same combination over the counter without any medical supervision of the patient whatsoever. In other words, the layman is now privileged to do things which a pharmacist with his professional training and background is not privileged to do; namely, pass judgment upon the safety of using a drug combination without medical supervision. If the pharmacist is not competent to exercise

such judgment, how then can it be construed that the layman is so qualified?

We can think of other instances; for example, one of the motion sickness preventives which has been released for over-the-counter sale wherein we have serious doubts as to the advisability of such action. This remedy is well-known to cause drowsiness and it is entirely conceivable that many persons will soon catch on to the use of this drug as a sleep-inducing hypnotic. This could easily lead to the use of this drug for purposes other than those for which it is intended. Who can predict the long term results of such promiscuous and ill-advised use?

Can it be that there are those who envision the day when most laymen will proceed to treat most of their ills unassisted and is self-diagnosis and self-treatment rapidly becoming the recommended course of action suggested as the one that should be followed by our citizens? From recent events, one would surely be led to think so. If, as it has been intimated by some who have given careful study to this present trend, the Durham-Humphrey Amendment is the factor responsible, then surely all physicians and pharmacists who have the public's welfare at heart should lend support to those who have already indicated that they feel that this Amendment should be repealed.

As for ourselves, we are firmly of the opinion that self-diagnosis and self-treatment by the laymen is responsible for a tremendous amount of delay and postponement of proper therapy—ofttimes to the point that it is too late to salvage the well-intentioned victim. Diagnosis, even for the most competent physician is an exceedingly complex and painstaking task. Do those who advocate self-treatment doubt this or do they believe that each individual is given some divine inspiration as to the nature of his disease? Pharmacists should do all in their power to reverse this trend or else the day will come when vending machines marked, "headache", "asthma", "anemia", "cold", "nausea", etc., will be stationed at convenient places so that the public will be in a position to treat their ills at the moment they arise!

L. F. Tice

RAISING THE PUBLIC'S ESTEEM FOR PHARMACY *

By Robert A. Hardt **

THE title of this paper presupposes that the profession of pharmacy is entitled to more esteem. I am sure there is no one in this room who would challenge the statement that our profession is entitled to more esteem. Therefore, I think we should start with that premise and look for ways to get that to which we are entitled and to *earn* more of it.

Unfortunately, there are pharmacists throughout this nation who have become discouraged, disgruntled and disillusioned about the profession which they have chosen as a career. This is a situation which will always be with us and one which is common to all professions whether it be medicine, law, dentistry or even the ministry. There may be more of these people within our ranks but to them I can only quote a familiar Chinese proverb:

"We cannot prevent the birds of sorrow from flying over our heads, but we can prevent the building of nests in our hair."

I am sure that the relationship of this proverb to our own problem is clear to all of us. While we cannot escape the negative side of our profession, I see no point in analyzing the reasons for the minus side. I do see many reasons for emphasizing the plus side and this is what I propose to do now.

When I chose the subject of this paper, I thought it would be relatively easy to prepare a lengthy list of things to do which will ultimately raise the public's esteem for pharmacy. This turned out to be the case but it was not easy to bring newness and freshness to the subject. Nevertheless, I hope that the proposals I shall now make will make almost everyone in this audience even more aware of that which you already know.

1. *Believe in What You Are Doing.* Only those who do believe in what they are doing will take real satisfaction in their work and will become dedicated to their tasks. Most people of character can-

* Presented at the Mid-Winter Alumni Reunion Banquet, Philadelphia College of Pharmacy & Science, Feb. 26, 1955.

** Vice President, Hoffmann-La Roche Inc. and President, American Pharmaceutical Manufacturers' Association.

not throw themselves wholeheartedly into a career which they do not believe in, and believe in deeply. There is more in pharmacy in the way of service to mankind than in the average career. How many professions offer more opportunities for contributions to the health and welfare of our fellow men than pharmacy? How many businesses or professions offer greater opportunity for more than the exchange of dollars for goods or services?

2. *Know Why Your Goods and Services Are Worth Their Cost and More to the Public.* One of the problems which faces our profession today is the erroneous belief held by the public that the cost of prescriptions is too high. In the blistering accusations that the public is being gouged and fleeced, the main target has been the pharmacist. He is being categorized in unbridled terms as an outright profiteer and exploiter of human ills.

We must face up to this problem squarely. When a customer complains that he is being overcharged, we cannot merely flinch and mumble platitudes. It is not enough to say, "Don't blame me. These new drugs are expensive."

One obvious necessity is, of course, that pharmaceutical manufacturers must strive to get these facts to the public. There is a great deal that we can do honestly and proudly. For those of you who have not read Donald Cooley's Booklet, "I Hate To Buy Drugs, But. . . ." I sincerely recommend that you do so.

We cannot take a cynical attitude about this problem. For if any industry or profession, no matter how great its accomplishments or how laudable its objectives, is misunderstood or subject to public distrust, the consequence is inevitably burdensome and restrictive legislation.

3. *Take Time to Train.* Whether we have only one employee or a staff of twenty, we have a definite responsibility for their training. Many employers fail to undertake a training program because it seems a difficult thing to do. Many employers lack confidence in their ability to train and their ability to explain. Most employees who are worth their salt are eager to learn and they have the right to expect training from us. How long has it been since you sat down with your staff at a time when all were relaxed to discuss your policies and ways and means for improving your services? The mere act of holding a meeting with this subject as the primary item of your

agenda will have a beneficial effect. The mere knowledge that you, the employer, have formally acknowledged the desire to improve your operations will have a good psychological effect on the members of your organization.

Allow me to illustrate with just one point. Some people do stand out from the crowd and they do it by using the same old techniques that "everybody knows." The difference is that they don't use these techniques as a matter of routine. They make them *mean* something. Lots of things will make your employees stand out such as a warm, enthusiastic smile; a pleasant, friendly interest in the customer; an extra tip on how to use the product; a courteous or helpful act. All these things help to make our contacts with those whom we serve more than a routine, mechanical relationship.

4. *Your Reputation.* Reputations, whether good or bad, must be earned. Reputation is a great intangible asset which must be created in the minds of those whom we serve or those with whom we work. Reputations are built over the years and we cannot place dollars-or-cents values on them. They are not a casual thing . . . they don't just happen.

Let me quote a few lines from a book entitled, *First Century of The Philadelphia College of Pharmacy.*

> "Charles Marshall became one of the master apothecaries of the city and by scrupulous probity of character, combined with great urbanity of manners, he secured the respect and affection of a large circle of friends and customers."

Later, as some of us may recall, Mr. Marshall had his difficulties . . . difficulties of a nature which all of us in our insecurity have reason to fear. Yet, even during those difficulties, his character and moral fiber enabled him to hold his reputation.

5. *The Pharmacist's New Role.* No one in this room will question the statement that the nature of the practice of pharmacy has changed, and changed markedly, during the past two decades. The actual compounding of prescriptions has largely disappeared. We cannot and should not groan about this and lament the new era. It represents progress, and progress cannot be stopped.

In looking at the bright side of this problem, the pharmacist's future is largely represented by his ability to serve the physician

as a therapeutic consultant rather than as a handmaiden as in the past. I, for one, would prefer to be the architect of even a small edifice than the one who lays the brick, saws the board or pounds the nail. The therapy is far more complex today than ever in the past. The physician doesn't have the time or the facilities to understand and know the scores of medicines which are put on the market each year. He must rely on a dependable source or sources for guidance. What better source of information than the practicing pharmacist and the pharmaceutical industry which have closer contact with the physician than even his own professional societies or organizations? We must, in my opinion, accept this situation and emphasize it as a positive goal.

6. The Pharmacist's Place in the Community. The pharmacist of today is an educated person. As such he deserves, and will inevitably command, a prominent position in the affairs of his community.

The pharmacist is a busy man. He, unfortunately, is subject to more administrative routine than is found in the average profession or business. He is in daily contact with the public which in itself is a difficult assignment. Yet, as an educated man, he learns to organize the functions of his profession and business in such a way that he will find time to become a so-called opinion molder.

Because he is educated, he is also articulate. If he is articulate at the right time and in the right place and if he has as his goal, the welfare of the public in general, his influence will be felt.

If he believes and believes deeply in his work, in what he is doing, then he cannot fail to earn what is needed of the material things of life and, what is more important, satisfaction and recognition of his services as a professional man.

The right to serve is one privilege which in this country will never be denied. For out of men's devotion to their self-appointed tasks have come the greatest gifts to all mankind. From devotion to the profession of pharmacy can come and will come the hidden gift of accomplishment. We shall raise the public's esteem for pharmacy as a career dedicated to the service of human life, health and happiness.

INHIBITION OF GLUCOSE OXIDATION AS A POSSIBLE MEASURE OF GERMICIDAL ACTIVITY *

By R. L. Stedman, E. Kravitz, and H. Bell **

Introduction

CONVENTIONAL biological test methods for determining the anti-microbial activities of germicides are based on a procedure in which survivors of the germicidal action are detected by their subsequent growth, i.e. incubation. These procedures are time-consuming. Any new test method which eliminates the incubation period would be of significant value. In this connection, a few studies have appeared which describe attempts to correlate the findings of conventional biological tests with data obtained from tests based on certain physico-chemical effects of germicides, e.g. the adsorption of quaternaries on wool (1), the release of conducting material by bacterial cells (2), and the quantitative agglutination of bacterial cells (3-4). None of these has been accepted as an adequate substitute for any conventional biological test procedure.

The problem is complicated by the need for selecting a standard biological test for comparative purposes. Biological tests are numerous and, in most instances, of such variability that the order of activity of a given series of antimicrobial agents may be found to vary with the test procedure employed. Recently, however, a test was devised which attempts to simulate certain use conditions encountered in the disinfection of floors [the Square-Diluent Method (5-6)]. Since this method was of current interest it was adopted for comparative purposes in the present work. In addition, the phenol coefficient values claimed by the manufacturers were also included in the evaluation.

This report summarizes findings on the relationship of the inhibition of glucose oxidation to the bactericidal activity of certain germicides using *Micrococcus pyogenes* var. *aureus*. Some degree

* The opinions expressed herein are those of the authors and are not necessarily similar to the views of the Department of the Navy.

** Industrial Test Laboratory, Phila. Naval Shipyard, Naval Base, Phila., Pa.

of correlation between inhibition of respiration and germicidal action has been reported in earlier work (7-10), but in no instance was a standard regulatory type test, such as the phenol coefficient method, or simulated use test employed as the biological test procedure.

Methods

Micrococcus pyogenes var. *aureus* was used throughout the study. Cultures were grown on nutrient agar in Roux bottles at 37°C. for 24 hours. The cells were harvested in distilled water, washed twice with distilled water and suspended in 0.1 M phosphate buffer. The cell suspension was aerated thirty minutes before use to reduce the endogenous respiration. Kjeldahl nitrogen determinations were made on the cell suspensions and the cells diluted to 0.8 mg. nitrogen/ml. with phosphate buffer before use.

The direct Warburg method was used for manometric determinations. The gaseous phase was air in all instances. Each flask contained 200 uM. glucose (0.5 ml. of 7.2% solution), 1.0 ml. buffer and 0.5 ml. cell suspension in the main compartment. The center well had 0.2 ml. of 20% KOH. One-half ml. of germicide dilution (or water in controls) was added to each sidearm. All flasks were shaken at 110 strokes per minute for thirty minutes at 30°C., after which the germicidal dilutions were tipped into the main compartment. Dilutions were run in duplicate. All flasks were shaken for thirty minutes after the addition of germicide and changes in uptake recorded for this period. The average uptake of each level of germicide and the average uptake of controls were then calculated for the thirty-minute period and the overall percentage inhibition for each level determined by dividing the average uptake for each germicide level by the average uptake of control flasks. Fifty percent inhibition levels were obtained by plotting percent inhibition versus germicidal concentration. In all instances the endogenous respiration was low, and no endogenous corrections were applied to the test values.

The Square-Diluent method was used to obtain bactericidal data. Briefly the method consists of inoculating the surfaces of stainless steel squares with organisms, drying the organisms, disinfecting the films of organisms by mixing with germicide and recovering the survivors after a 10-minute exposure at 20°C. A 99.99% reduction in bacterial numbers was considered the endpoint in the work reported here.

The following commercial samples were studied:

1. A phenolic product containing *o*-phenylphenol and sodium ricinoleate (designated "Phenolic A").

2. A phenolic product of the emulsifiable type containing a mixture of 4-chloro-2-phenylphenol, 6-chloro-2-phenylphenol and potassium castor soap (designated "Phenolic B").

3. A phenolic product containing a mixture of the sodium salts of chloro-phenylphenols and chloro-hexylphenols with an unidentified soap (designated "Phenolic C").

4. A cresylic product consisting of cresylic acids and an unidentified soap (designated "Cresylic").

5. A quaternary ammonium germicide of the structure, diisobutyl phenoxy-ethoxy-ethyl-dimethyl-benzyl ammonium chloride (designated "Quaternary A").

6. A quaternary ammonium product consisting of a mixture of alkyl (C_8-C_{18}) dimethyl-3,4-dichloro-benzyl ammonium chloride and alkenyl (C_{16}-C_{20}) dimethyl-ethyl-ammonium bromide (designated "Quaternary B").

Test Results

Manometric and bactericidal data are presented in Table I. The dilutions of the various germicides effective in inhibiting oxidation of glucose were much greater than the dilutions required to kill the organisms in the Square-Diluent test. No quantitative correlation between the relative activities of the phenolics and cresylic in the Square-Diluent test and their relative activities in inhibiting glucose oxidation could be demonstrated. Similarly, a relationship between the claimed phenol coefficients of the products and the relative activities of the latter in inhibiting oxidation was not evident. In the case of the quaternaries, some degree of quantitative correlation was found to exist between the relative manometric values and the relative bactericidal activities obtained by the Square-Diluent test; no correlation existed between the relative manometric values and the claimed phenol coefficients of the quaternary products.

TABLE I

COMPARISON OF FINDINGS OBTAINED IN ANTIBACTERIAL TESTS WITH MANOMETRIC DATA FOR SEVERAL GERMICIDES

Germicide	Inhibition of Respiration (A)*	Bactericidal Activities: Square-Diluent Test (B)**	Bactericidal Activities: Phenol Coefficient (C)***	Relative Activities: A	Relative Activities: B	Relative Activities: C
Phenolic A	1:2300	1:50	3.3	1.0	1.0	1.0
Phenolic B	1:1500	1:80	6.5	0.65	1.6	2.0
Phenolic C	1:2200	1:100	16	0.96	2.0	4.8
Cresylic	1:2700	1:100	2.5	1.2	2.0	0.76
Quaternary A	1:25,000	1:500	410	11	10	120
Quaternary B	1:42,000	1:1000	330	18	20	100

* Dilution of formulation (phenolics and cresylic) or of active ingredients (quaternaries) giving 50% inhibition of glucose oxidation after 30 minutes exposure.

** Dilutions giving 99.99% reduction of *M. pyogenes* var. *aureus* after 10 minutes exposure at 20°C.

*** Phenol coefficients against *M. pyogenes* var. *aureus* claimed by manufacturers.

Discussion

Considering the profound differences in test conditions existing in the manometric and antibacterial tests, it is perhaps not unexpected that no correlation was found between the two in most instances. The manometric technic provides here a means of expressing the effect of germicides on a single system (although a complex one) of enzyme reactions. The Square-Diluent test provides a measure of all factors contributing to disinfection, including those influenced by the physical properties of the disinfectants. For example, spreading wetting, dispersion, suspending action, differential adsorption between cells and metallic surface, and other expressions of adhesive, cohesive and adsorptive forces undoubtedly play a role in the disinfection of the stainless steel surface in the Square-Diluent test. Many of these would not be expected to play an equally important role in the inhibition of glucose oxidation as performed in the manometric procedure.

On the other hand, some degree of correlation was demonstrated with the two quaternary germicides. Further work will be required with other quaternaries of diverse structure, however, before a general statement of correlation can be made for this type of germicide. Since

the quaternaries were of secondary importance in this study, the number of samples was limited to two.

The failure to correlate manometric data and phenol coefficient values may also be an expression of differences in test conditions since the ratio of cells to germicide, test temperature, exposure time and other factors are not similar in the two methods.

Summary

The relationship between the degree of inhibition of glucose oxidation by germicides and the bactericidal activities of these agents have been studied. Using phenol coefficient values and data from a new performance test method as bactericidal activities, no correlation between relative antibacterial properties and the degree of inhibition of glucose oxidation can be shown in the case of phenolic germicides. A correlation between the two properties was demonstrated with two quaternary ammonium germicides, using bactericidal data obtained with the performance test method.

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ALL MAY SHARE THE MEDICAL ADVANCES OF THE WORLD

By E. Fullerton Cook

WE live in an age and world in which the health sciences have combined their knowledge and research in a program which offers to all mankind new hope for health and greater happiness. The distributing center for this knowledge is the World Health Organization, operating as a division of the United Nations.

The impact of this disease-conquering and health-producing force already is being felt in many parts of the world where only a few years ago disease was rampant. Malaria, tuberculosis, pneumonia, yaws, venereal diseases, and many other devastating sicknesses are being prevented or cured by the miracles of modern medicine and pharmacy.

A major responsibility of the government, and especially the health officials, of every nation of the world is to see that this program is advanced to a maximum degree. In all countries it means an increase in the number of trained personnel in all divisions of the health professions and the recognition of, and availability of the new drugs which are so large a factor in the successful advancement of world health.

A large number of highly trained physicians is, of course, a fundamental if this dream is to be realized. This in turn means more medical schools and more hospitals with trained associates, an essential for their effective operation. But this expansion is possible only when adequate financial help is provided.

In some areas this financial help comes mainly from gifts and endowments provided by wealthy individuals or foundations having a deep concern for the welfare of their fellowmen. In other countries the government has assumed this responsibility and is attempting to provide medical aid for every citizen.

However, there are vast areas today where none of these financial resources are available and many persons are deeply concerned over the human tragedies resulting from uncontrolled disease in many parts of the world.

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* Prepared for Presentation at the Pan American Pharmaceutical Conference, Sao Paulo, Brazil; Dec. 1, 1954.

Fortunately we live in an age when the facts are forced upon us all and cannot be ignored, and when effective measures are being established to meet them. The agency, already referred to, and widely known as W H O, operates with a world wide humanitarian vision and has developed into one of the most important and successful activities of the United Nations. Its program has already accomplished more than anyone believed possible even a decade ago.

Teams of W H O who are experts, supplied voluntarily by countries where medical and health knowledge is well advanced, have gone into many parts of the world where the need was especially urgent and are helping personally to plan and direct health programs and, even more important, to train local officials and aides to take over and expand these programs. This ever growing effort gives hope for the eventual sharing by everyone of the advantages assured by better health.

To realize our dream of peace in the world reasonably good physical conditions must prevail everywhere. Ability and incentive to work, adequate food, better homes and clothing, more education and opportunity must be offered. All of these have a specific relation to good health.

We of the Pan American Pharmaceutical Congress are an important and essential factor in making this ideal a reality. Without the production and efficient distribution of the modern therapeutic agents these revolutionizing results would be impossible.

Here is pharmacies' opportunity, to march side by side with the other essential health groups of this world-conquering force, with a promise of results more far reaching than any previous human effort in history.

What I am trying to emphasize is the necessity for the pharmacists of the world to supply the medical profession with the ammunition for this great health battle, ammunition uniform in quality, purity and strength, ammunition which can always be trusted to have the expected effect and value and safety.

How can this be assured? The principles have been well established. They have resulted from centuries of experiment and the development through the years of idealistic ethical codes which are sacred to all in the health professions.

The establishment of conditions which will assure uniform and dependable medicines requires a highly trained and devoted working

team, representing almost every division of modern arts and sciences, plus governmental cooperation and legal enforcement.

Such a team has at its center the physician and the surgeon. These must be depended upon to evaluate the efficiency of the therapeutic agents or accessories and determine which are essential or at least of high value in combatting disease. Back of these decisions have been able research groups, physicians, chemists, pharmacologists, physicists, mathematicians, botanists, and others.

Now, with the discovery of these many new therapeutic agents and diagnostic aids and helpful devices, and with the proof of their value established, the skills and knowledge of the pharmacist in production, standardization, controls, preservation, packaging and distribution, enter the picture. Here, too, is required for success administrative and financial ability of a high order, plus the aid of almost every art and scientific field of knowledge, with specialized engineering and sales and marketing organizations. And to all of this must be added a legally established enforcement agency, having authority and facilities for checking and controlling the sale, promotion and distribution of approved medicinal agents.

In some countries all of these factors have been firmly established and have fully proven their value and practicability. They have made a tremendous contribution toward the advancement of the health of their country.

The essentials are: 1—Advanced medical knowledge through medical colleges or medical experts from W H O or other medical centers; 2—Hospitals and health centers, well equipped and administered and efficiently staffed by doctors, surgeons, technicians, nurses, and pharmacists; 3—Reliable agencies for the manufacture, importation and distribution of dependable therapeutic agents and equipment; 4—A pharmacopoeia or formulary, recognized by the national government as the official standard for the quality, purity, and strength of all essential medicines required to implement this health program; 5—Finally, the necessary laws and machinery for the enforcement of these standards.

An Approved Pharmacopoeia Essential—Many countries of the world have their own national pharmacopoeias, and take justifiable pride in maintaining them and, through frequent revision, endeavor to keep abreast of the constantly changing and growing world medical and pharmaceutical knowledge.

One of the early accomplishments of the World Health Organization has been the preparation of standards for many of the most important therapeutic agents used today in the cure of disease. These standards represent the combined knowledge and experience of experts in drug standardization from many countries where similar standards are now official and enforced.

The W H O permanent committee on pharmacopoeial standards is aided by numerous panels of specialists, drawn from many countries, and the suggested standards are submitted to all W H O member nations for review before adoption.

In this way the "International Pharmacopoeia" was created, of which Volumes I and II of the First Edition are now, or soon will be, available in English, French, and Spanish. An important and essential feature is a policy of frequent revision to keep the standards up-to-date, which means that Volume I is now under active revision.

An important fact, which must be kept in mind, with respect to this so-called "International Pharmacopoeia", is that it has no legal or official status in any country of the world unless a country adopts it, by specific national legislation. However, a basic principle, approved by the Assembly of the World Health Organization, is that any or all of its standards are freely available to any country which may wish to incorporate them in their national pharmacopoeia. All countries are urged to do this as soon as possible and thus bring about world uniformity in drug standards. Furthermore the Assembly also offers, to any country, for official adoption, the complete volume if they do not now have a pharmacopoeia of their own.

Importance of a National Pharmacopoeia for Every Nation—As one having an intimate knowledge of the many factors entering into a national pharmacopoeial program, the establishment by each country, of their own parmacopoeia, is strongly urged.

Each country has its own practices and traditions and distinctive needs, as well as a justifiable pride in its own qualifications for understanding and meeting these needs. On the other hand we live in what is rapidly becoming "One World" and we cannot ignore facts and knowledge which have attained world status. While, therefore, there are many advantages in establishing and maintaining a national pharmacopoeia it is equally important that standards for the essential drugs, as recommended by W H O, should not be ignored.

The following suggestions are therefore offered as applicable where no national pharmacopoeia now exists:

1—Establish a "Pharmacopoeia Committee" through the health division of the national government or through the professional societies representing medicine, pharmacy, chemistry, biology and related sciences, but with government approval. The Committee should include outstanding experts of the country in medicine, pharmacy, chemistry, biology, etc.

2—Adopt, as Part I of the book, all of the drugs and preparations of the First International Pharmacopoeia. Then as Part II include such other drugs and preparations as the Committee knows to be of importance in the medical practice of their country.

It would probably be possible for such a national Committee to arrange with the officials at W H O headquarters in Geneva, Switzerland, to obtain, at a relatively small cost, the complete printed text of the International Pharmacopoeia ready for binding into each national pharmacopoeia, and thus greatly reduce the initial cost of publication.

In this way many countries, not now having a national pharmacopoeia, could establish their pharmacopoeia with little delay and at minimum cost. It is quite possible that the sale of the book within the country would cover all production costs.

The advantages of setting up drug standards which are uniform throughout the world are numerous. First: Assurance of reliability in action and in purity for the drugs used by the medical profession of the nation. Second: Uniform standards enforced by law create a fair, competitive situation which should help keep drugs within a reasonable price. Third: The control of quality is far less difficult when uniform and workable tests and assays apply to every stage of manufacture, importation, and distribution, whether in local or in international trade.

Conclusion—The objectives of this paper are twofold: 1—To invite every nation here represented to participate fully in the benefits the World Health Organization has to offer. 2—To earnestly urge each nation, whether it now has its own national pharmacopoeia, or is in the planning stage for a book of drug standards, to do its part in establishing uniform world standards for the marvelous medicinal agents now available.

SELECTED ABSTRACTS

The Intramuscular Administration of Oxytetracycline. Schlicke, C. P., and Anderson, W. E. *Antibiot. and Chemother. 4:*939 (1954). The intramuscular administration of oxytetracycline was found to be effective in a wide variety of infectious conditions. It appeared to be as effective when administered intramuscularly as when administered by other routes. It was also effective in the control of complications following emergency or septic surgery.

The antibiotic was administered in the form of a combination of equal parts oxytetracycline hydrochloride and magnesium chloride hexahydrate with 2 per cent procaine hydrochloride, reconstituted prior to use with Water for Injection to a concentration of 50 mg. of oxytetracycline hydrochloride per milliliter. The usual dose was 100 mg. of the antibiotic every 12 hours, but as high as 250 mg. was given at one time.

A study of the tissue response did not reveal any correlation between tissue tolerance and dosages, concentration, or site of injection. Only 21 of the 110 patients treated complained of pain after one or more injections but only 7 of these showed any evidence of redness, heat or induration at the site of injection. No serious problem developed with regard to local reactions and suppuration did not occur. At no time was there any evidence of untoward systemic effects of the antibiotic. Technical difficulties prevented a study of the blood levels attained.

The authors concluded that the intramuscular administration of the oxytetracycline magnesium chloride complex satisfies a need for an effective broad-spectrum antibiotic suitable for administration by the intramuscular route.

Magnesium Aluminum Hydroxide Gel Therapy. Morrison, S. *Am. J. Gastroenterol. 22:*301 (1954). Magnesium aluminum hydroxide gel was administered as an antacid to 136 adults. Both the liquid suspension and the tablets were used. Among the patients, 50 had a diagnosis of peptic ulcer, 52 hyperacidity, 28 spasticity, 5 heartburn, and 1 gastritis. The duration of the symptoms had been over a range of 1 to 7 months.

Constipation, a troublesome side effect with aluminum hydroxide gel, occurred in only 8 of the 136 patients. It was never of sufficient severity to require discontinuation of therapy and the 8 patients had been troubled with constipation prior to the beginning of therapy with magnesium aluminum hydroxide gel. Dryness of the mouth and throat, also an annoying side effect with aluminum hydroxide gel, was encountered in only 6 patients. In 5 of these the dryness was traceable to associated medication such as belladonna and Banthine.

The author stated that magnesium aluminum hydroxide gel, when compared with aluminum hydroxide gel, was more effective therapeutically, possessed better palatability, and, as noted above, produced less constipating effects and less dryness of the mouth and throat.

Some Properties of Riboflavin Phosphate. Sleezer, P. E., Weiss, M. S., and Siemers, G. F. *Drug and Cosm. Ind. 74:*196 (1954). The esterification of riboflavin at the 5′ or end position in the ribose chain produces a number of valuable characteristics not possessed by the parent compound.

The phosphate is highly stable against hydrolytic cleavage. Even after boiling for four hours at a pH of 6.0 the amount of hydrolysis was less than 12 per cent. Solubility is greatly increased. The solubility of Riboflavin U. S. P. is approximately 0.12 mg. per ml. At a pH of 5.6 the solubility of the phosphate is 68 mg. per ml., while at pH 6.9 the solubility is 112 mg. per ml.

Solutions of riboflavin-5′-phosphate are stable in the presence of ascorbic acid and in the presence of other factors of the vitamin B complex. However, they are not stable in the presence of calcium and the heavy metals. These ions present in solution will cause the precipitation of the insoluble salt of the phosphate ester. Therefore, calcium pantothenate cannot be used in vitamin B complex solutions containing the riboflavin ester. Panthenol, the alcohol analog is free from incompatibility. Another factor which must be borne in mind is that the ester is more sensitive to light than is the base.

Of interest to the analyst is the fact that the fluorescence curve of the ester is practically superimposable upon the curve of the base. The authors also found that no chloroflavin was formed from the ester under ordinary conditions of storage and use.

While these characteristics apply largely to solutions intended for injection, they also apply to solutions for oral administration.

Antibiotic Resistant Infections Treated With Furadantin. *Int. Rec. Med. and G. P. Clin. 167:*218 (1954). A group of 200 patients with infections which had proven to be resistant to various antibiotics were treated with Furadantin. Of these patients, 190 were treated for cystitis and pyelonephritis. Most of the infections were found to be due to *Bacillus proteus.*

The drug was administered in a daily dose of 5 to 10 mg. per Kg. of body weight, in four divided doses. Therapy was continued until the urine was sterile or there was a relief in symptomatology. The term of therapy varied from 3 days to 3 weeks with an average of 7 days. Symptomatic relief was obtained predominantly in the chronic cases, particularly where there was evidence of obstructive conditions.

Five cures were obtained out of 6 cases of *B. proteus* septicemia with therapy with Furadantin. Sterile blood cultures were obtained 24 hours after the onset of therapy. The drug also was found to be effective against resistant *B. coli,* Pseudomonas infections, *Aerobacter aerogenes,* and staphylococci.

The drug was found to be excreted in the urine in a concentration equal to about 40 per cent of the ingested dose. This is one factor accounting for its usefulness in urinary tract infections. With high doses, nausea and vomiting are occasionally experienced. Liver and kidney function tests and blood tests performed during therapy showed no abnormalities which could be attributed to the drug.

Placebo Therapy in Medical Practice. Leslie, Alan. *Am. J. Med. 16:*854 (1954). An interesting discussion of the use and place of the placebo in therapy was presented by the author. He defined a placebo as "a medicine or preparation which has no inherent pertinent pharmacologic activity but which is effective only by virtue of the factor of suggestion attendant upon its administration".

This form of deception is indicated in a number of conditions. Patients who need support for strong dependency feelings may find in the placebo the symbol of the doctor and the answer to their needs. In other patients, during a period of diagnostic observation, the placebo may provide a sop to their impatience and keep them under control until definite therapeutic measures can be undertaken. Occasionally, a patient may have been taking such a conglomeration of drugs that the diagnostic picture has been confused by cumulative

or additive effects of the drugs. In such cases, the need of the patient for his medications may be transferred to a placebo so that these confusing side effects may be dissipated.

The placebo is a research tool of very great importance in the "double-blind" evaluation of new drugs in which neither the physician nor the patient knows whether the drug under study or the placebo control is being given at a particular time.

The transition from dependence upon sedatives or narcotics to no medication is frequently made easier by the substitution of a placebo for the medication during the latter portion of the withdrawal period. In incurable neoplastic diseases the administration of sedative and narcotic control medication is necessary. However, the secondary effects such as constipation and respiratory depression may frequently be relieved by the judicious interpolation of placebos. A related situation may arise in the administration of analgesics or sedatives to chronically ill patients such as arthritics. Unless therapy is interrupted from time to time, the patients may become dependent upon or tolerant to it. Placebos may be a valuable aid in the transition from medication to no medication.

The author did not enter into the controversy as to whether or not placebos have a place in psychiatry. However, he suggested that they may be of value in the psychoneuroses. He emphasized strongly, however, that there is no justification for the prolonged use of a placebo merely to pacify a patient whose problem is not thoroughly understood.

It was concluded that placebos have a useful place in diagnosis, therapy and research. Their use requires not only a broad medical knowledge but also a depth of human understanding.

Treatment of Arteriosclerosis and Vague Abdominal Distress With Niacinamide Hydroiodide (without side effects), Feinblatt, T. M., Feinblatt, H. M. & Ferguson, E. A. *Amer. Jour. Dig. Dis., 22,* Jan., (1955). The therapeutic value of niacinamide hydroiodide in combination with sodium iodide in generalized arteriosclerosis without hypertension was studied in a series of 59 cases. There were 33 females and 26 males. The average age was 61, weight 149 lb.; systolic blood-pressure 149, diastolic 87 mm. The symptoms were dizziness in 55 cases, excessive fatigue in 51,

vague abdominal distress in 45, chronic headaches in 33 and disorientation in 24. Aortic sclerosis was present in 36 cases and arcus senilis in 26. Intravenous iodo-niacin injections (5 cc. containing 100 mg. niacinamide hydroiodide and 1 Gm. sodium iodide) followed by iodo-niacin tablets (niacinamide hydroiodide 25 mg. and sodium iodide 135 mg.) were administered for a period of more than a year. Dizziness was relieved in 71% of cases, vague abdominal distress in 87%, chronic headaches in 61% and disorientation in 50%. There was no symptom of iodism or other side-effect in any case, even when large dosages were given. The complete absence of iodism is attributed to the use of niacinamide hydroiodide. The antipellagric action of this drug is believed to correct dysfunction of the co-enzyme oxidation system by a mechanism similar to that of niacinamide hydrobromide in relation to bromism.

The Use of Bulking Resins as Laxatives. Martin, G. J., Swayne, V. R., and Beiler, J. M. *Am. J. Digest. Diseases 21:293* (1954). It had been reported that certain low cross-linkage resins had marked swelling properties. The authors investigated this property as applied to use as laxatives. Carboxymethylcellulose was used as a control.

The fecal output of dogs was measured when the food intake was maintained constant but water intake was allowed to vary. Experimental periods were alternated with control periods, the latter without medication. When either of two low cross-linked vinyl resins or carboxymethylcellulose were administered in doses of 1 Gm. per dog, a significant increase in fecal output was obtained in every case. A marked increase in water intake was also observed during the experimental periods. There was no significant difference in the increases in fecal output among the three compounds administered. No increase was obtained when the dose was decreased to 0.25 Gm. per animal.

It would, therefore, appear that these resins act in a manner similar to hydrophilic colloids by increasing fecal output in animals as a result of their ability to attract water and undergo swelling. It would thus appear that they should have application as laxatives.

Stability of Solutions of Benzyl Penicillin. Bacteriostatics Subcommittee of the Conference on the Control of Antibiotics. *Pharm. J. 172:229* (1954). The preliminary report published by the Committee indicated that the stabilizing power of sodium citrate decreased with increasing concentrations of benzyl penicillin G. They found that 4 to 5 per cent w/w of sodium citrate was inadequate to stabilize a concentration of 500,000 units of benzyl penicillin when stored at 25° C.

When a solution of benzyl penicillin containing 500,000 units per cc. in the presence of 4 to 5 per cent w/w sodium citrate was stored for 4 days at 25° C., the loss of potency was more than 20 per cent in 69 per cent of the samples. Solutions having a potency of 100,000 units of benzyl penicillin were, likewise, not stabilized when the concentration of sodium citrate was less than 3 per cent. However, when a concentration of 4 to 5 per cent of sodium citrate was used, 78 per cent of the samples showed falls in penicillin potency of less than 10 per cent after 4 days at 25° C. This loss was not considered to be significant.

Solutions containing 50,000 to 500,000 units of benzyl penicillin per cc. which were stabilized with 4 per cent sodium citrate and stored at 4° C. retained their potency for at least 8 days.

The Committee also reported that even gross deterioration of the benzyl penicillin in solutions with or without the sodium citrate was not necessarily accompanied by obvious physical changes in the solution.

All of the assays were performed by the iodimetric method of assay for total penicillin as described in the British Pharmacopoeia.

The Treatment of Malaria With Primaquine. Gennis, J., Straus, B., Kenney, M., and Klein, B. *Am. J. Med. 17:223* (1954). A group of 101 Korean Veterans were treated for malaria with primaquine. The average interval to relapse was seven months after leaving the endemic area.

Primaquine base was administered in a dose of 15 mg. after a meal once daily for 14 days. This therapy proved to be rapidly effective and highly satisfactory in the majority of cases. There was one relapse and 4 recrudescences. A relapse was defined as a recurrence of the disease thirty days or more following the completion of therapy. It is attributable to a failure of the drug to eliminate the

tissue phase of the parasite. A recrudescence occurs within thirty days of the completion of therapy and is due to a weak effect upon the erythrocyte forms of the parasite and does not signify failure of the drug to eliminate the tissue forms. The occurrence of the recrudescences indicates that primaquine is not as effective as certain other drugs, particularly chloroquine, against the erythrocytic forms of the malarial parasite. In such cases, therefore, the optimum therapy should include both primaquine and chloroquine. The authors recommended the following regimen: chloroquine phosphate should be given initially in a dose of 1 Gm. followed by 0.5 Gm. in six hours. On the second and third days doses of 0.5 Gm. are given. Primaquine should be given in a dose of 15 mg. of base once a day for 14 days.

The toxic manifestations from the administration of primaquine were negligible. Nausea, abdominal pain, dizziness, tinnitus, vomiting, fever, and headache were not observed, as they had been in certain other types of therapy. Methemoglobinemia was present to a mild degree but returned to normal rapidly following completion of therapy.

Rapid Tablet Identification by Spot Reactions. Cooper, P. *Pharm. J. 173:*481 (1954). A rapid method of tentatively identifying tablets of dangerous drugs was reported by the author. He proposed it as useful where it is frequently necessary to quickly identify tablets in cases of poisoning, such as in hospitals.

The method is a spot-test method. A small amount of powder is scraped from the tablet or from the center of a broken coated tablet. Five small piles of the scrapings are placed about 5 cm. apart on good filter paper or chromatogram paper. Six reagents are kept ready and are dropped on the small piles of powder in rotation. Any color spreading into the paper within one minute is noted. A second drop of reagent may be added if necessary to verify the reaction. In all cases blank controls of the reagents on the paper should be made. Comparisons should also be made with a known sample of the suspected drug. When colors develop they are best observed by transmitted light through the paper after shaking off the excess powder after one minute.

The six reagents employed are: Reagent A—10 per cent pyridine in chloroform; Reagent B—0.5 per cent aqueous cupric acetate;

Reagent C—10 per cent aqueous sodium nitrite 1 part plus dilute hydrochloric acid 9 parts, freshly mixed; Reagent D—20 per cent aqueous iodic acid; Reagent E—1 per cent aqueous ferric chloride; and Reagent F—2 per cent aqueous p-dimethylaminobenzaldehyde in 20 per cent hydrochloric acid.

A table of the color reactions obtained with commonly encountered drugs is given. Some 85 drugs or groups of drugs are included. Obviously this is not intended as a final analytical procedure but simply as a more conclusive and rapid means of identifying tablets in an emergency than unaided and haphazard examination.

Relationship Between Immunizing Injections and Paralytic Poliomyelitis. Peach, A. M., and Rhodes, A. J., *Am. J. Pub. Health 44:*1185 (1954). The question constantly recurs whether or not to immunize just prior to the anticipated polio season. Recent studies have fairly well shown that the intramuscular administration of irritant drugs or antigens may serve to precipitate paralytic poliomyelitis in the inoculated limb, within a period of about four weeks. It is probable that the virus leaves the blood stream during the period of viremia and settles in the traumatized area. Further spread then occurs by way of nerve fibers to the spinal cord.

The authors made a study of 236 cases of paralytic poliomyelitis between July and December, 1953. Verified histories were obtained with regard to recent immunization against diphtheria, pertussis and tetanus. Of 89 patients with bulbar paralysis, 8 had been immunized within 90 days of the onset but only 2 within 28 days of the onset of symptoms of poliomyelitis. Of 147 with spinal or bulbospinal paralysis, 18 had been immunized within 90 days but only 6 within 28 days of the onset of symptoms. There was no evidence that immunization precipitated paralysis in the inoculated limb. These results were also compared with a similar study conducted in 1951. The results were strikingly similar.

The authors, therefore, concluded that there was no evidence that the immunizing procedure used precipitated paralytic poliomyelitis in the 28 or the 90 day period following the injection. They recommended, however, that an antigen be used which is free from alum and therefore relatively non-irritant. They also recommended that it be injected subcutaneously, at least during the poliomyelitis season.

Stability Studies on Aqueous Solutions of Ferrous Gluconate. Johnson, C. A., and Thomas, J. A., *J. Pharm. Pharmacol VI:*1037 (1955). The stability of aqueous solutions of ferrous gluconate was studied and various factors affecting the stability were delineated.

The authors found that the traditional antoxidants usually associated with ferrous iron preparations, such as, dextrose and dilute hypophosphorus acid, had little or no effect in preventing the oxidation of the ferrous gluconate. A solution buffered to a pH of 4.5 with citric acid and sodium citrate also showed no retardation of oxidation. However, it was found that the inclusion of 0.3 per cent of citric acid in about 20 per cent syrup of orange did improve the flavor.

The ratio of the volume of air to that of solution apparently played no part in determining the rate of oxidation but it did play an important part in the extent of oxidation. Therefore, it is essential to keep these solutions in small, well filled containers. The lower the concentration of total iron in the solution the higher will be the proportion of ferric ions. A concentration of about 10 per cent ferrous gluconate seemed to be about optimum for stability.

Light will not only tend to arrest but ultimately to reverse the oxidation of ferrous to ferric iron in solutions of ferrous gluconate. A precipitate is frequently formed in containers stored in the light. This precipitate has been identified as ferrous oxalate. The presence of 20 per cent dextrose will retard such precipitate formation. Therefore, it was recommended that solutions of ferrous gluconate be prepared with 20 per cent of dextrose and be stored in direct daylight. If they are not stored in the direct sunlight, the authors recommended that the percentage of dextrose be decreased to about 7.5 per cent, but the proportion of ferrous ions will gradually decrease.

Studies on the Pharmacology and Therapeutic Efficacy of Tetracycline. Milberg, M. B., Kamhi, B., and Banowitch, M. M. *Antibiot. and Chemother. 4:*1086 (1954). Factors in the pharmacology of tetracycline were studied by the authors using three forms of the drug, tetracycline hydrochloride in gelatin capsules, tetracycline hydrochloride in coated tablets, and tetracycline trihydrate in gelatin capsules.

The antibiotic serum levels were obtained promptly and maintained at consistently high levels during the period of administration. Following the administration of 0.25 Gm. of tetracycline every six hours, serum levels of between 1.25 and 5.0 ug./ml. were attained within 24 hours with a maximum of 4.25 ug./ml. on the fourth day. Proportionately higher serum levels were obtained with increasing doses up to 1 Gm. every six hours, the largest dose given in this study. The serum level also remained significantly high for as long as 48 hours following discontinuation of therapy.

Diffusion of the antibiotic was good following oral administration. Tetracycline was found in the pleural fluid, ascitic fluid, spinal fluid, and placental blood. The antibiotic also appeared rapidly in the urine. Higher urinary levels were attained than with the analogues of tetracycline on the same dosage schedule.

There were virtually no undesirable side reactions to the drug with dosages of 0.25 Gm. When the dosage was increased to 3 to 4 Gm. a day, 6 of 11 patients had mild gastrointestinal disturbances. In the patients who exhibited gastrointestinal irritability, nausea was the predominant symptom, occasionally accompanied by diarrhea, abdominal cramps, and vomiting. The incidence of these reactions was considerably lower than with oxytetracycline or chlortetracycline.

Tetracycline was employed in the treatment of 118 patients with a variety of clinical infections primarily of urologic, upper respiratory or pulmonary nature. The clinical antimicrobial activity of tetracycline appeared to be comparable to that of oxytetracycline and chlortetracycline.

Chlorpromazine in Psychiatric Treatment. The new compound, chlorpromazine, has shown good potential in the treatment of patients with various mental illnesses. The way in which it alters behavior is not yet known. The sleepiness which is produced does not approach coma even with doses 10 times the average therapeutic dose. Patients may be aroused easily and will converse rationally. In most psychotic patients intelligence, memory, and judgment are improved. There is no increase of tolerance to the effects of the drug but, rather, most patients can be kept well on smaller doses than used in early treatment.

Deep intramuscular injections are usually given to psychotic patients. The initial dose is 50 to 100 mg. four times a day. This daily dose is increased by 100 to 200 mg. every other day, until the patient calms down. Then intramuscular therapy is substituted gradually with oral therapy. A maintenance level of 100 to 200 mg. a day is gradually attained by reducing the dosage from the maximum given. Most patients are weaned from the drug within about two months.

Among the conditions which have responded well to the therapy are: deliriums or toxic confusional psychoses, alcoholic delirium, attacks of mania, and schizophrenia. Depressed patients and minor mental illnesses including anxiety neuroses, hysteria, and migraine have given more variable results.

No dangerous side effects have been observed thus far by the authors. Allergic manifestations are, however, not uncommon. The most common minor side effects are dryness of the mucous membranes, nasal stuffiness, and slight blurring of vision. It has also been found to potentiate the effects of opiates and barbiturates.

Studies on Synergistic Combinations of Drugs. Davis, L., and Sevag, M. G. *Antibiotics and Chemother. 5*:80 (1955). A different approach to the problem of synergism of combinations of drugs against various bacteria was presented by the authors. There is a belief that the enzymatic pattern of a microbial cell differs in accordance with the nutritional environment used for growth purposes. If this is so, then the resistance or sensitivity to an antibiotic may be conditioned by this interrelationship. In the medium in which the greater resistance is shown, an organism may be capable of bypassing certain metabolic pathways that are affected by the antibiotic. Conversely, in the medium in which the organism is more sensitive to the drug, the organism is unable to shift its metabolism sufficiently to alternate pathways and thus vital functions cease.

Using two widely different media, nutrient broth and salt-glucose medium, the authors studied the sensitivity of five different gram-negative organisms to ten different drugs. Regardless of the five organisms studied, bacitracin, streptomycin and neomycin demonstrated a greater sensitivity in the nutrient broth than in the salt-glucose medium. In a like manner, penicillin, chlortetracycline, oxy-

tetracycline, chloramphenicol, carbomycin, and sulfathiazole demonstrated a greater sensitivity in the salt-glucose medium than in the nutrient broth. With polymyxin B, the organisms rather than the media appeared to be the determinant factor as to the sensitivity pattern. On this basis, the authors divided the ten drugs into three groups or patterns.

The authors discussed the possible applications of their findings but came to only tentative predictions. They felt, however, that it might be possible to produce a synergistic effect on a particular organism if a drug from group one was combined with a drug from group two in either medium. In salt-glucose medium the effect would be that of increased sensitivity while in nutrient broth it would be that of reduced resistance.

Trichomonas Vaginitis Treated With Sodium Caprylate. Reich, W. J., Nechtow, M. J., Subotnik, N., Kurzon, A., and Reich, J. B. *GP 10:*58 (Nov. 1954). A group of 104 women had been found to have *Trichomonas vaginalis* vaginitis by examination by means of the hanging drop method for the identification of the organism. These patients then completed the prescribed course of treatment as follows: Each week the vagina was thoroughly cleansed with a 20 per cent solution of sodium caprylate diluted 1:3 with water and then allowed to dry. The entire vaginal mucosa was coated with a powder containing 10 per cent of the drug and then 5 grams of a cream containing 10 per cent sodium caprylate was deposited in the posterior fornix. The patient was then instructed to douche each night with a solution prepared by adding one tablespoonful of the 20 per cent solution to a quart of warm water. Following this procedure the patient applied the vaginal cream with an applicator. Treatment was continued for at least 4 weeks. Three consecutive weekly hanging drop examinations begun one month after completion of treatment were considered indication of a cure.

Of these patients 92 were judged cured, 53 of whom were followed for 2 to 4 months without recurrence. In four additional patients there was marked improvement in subjective symptoms but the smears remained positive. In the 8 remaining patients no improvement was obtained in spite of treatment for as long as eight weeks.

The authors concluded that the success of the treatment has little to do with the pH of the vaginal tract. They felt that the commonly accepted concept of an acid pH being required for effective treatment in this type of infection is not valid. Effective treatment, rather, depends upon the use of a compound with inherent trichomonacidal activity, regular mechanical cleansing of the infected tract, elimination of other foci of infection, and perseverance in therapy.

The Treatment of Hypertension With Alseroxylon Fraction Alone and with Hexamethonium. Dennis, E., McConn, R. G., Ford, R. V., Hughes, W. M., Beazley, H. L., and Moyer, J. H. *Postgraduate Med. 16:*300 (1954). A group of 24 patients with hypertension of varying degrees of severity were treated with alseroxylon, an alkaloidal extract from Rauwolfia serpentina. Initially, large doses were given but it became evident that 8 mg. per day in four divided doses gave as much benefit as the larger doses. In this group, 16 patients (67 per cent) showed a decrease of 20 mm. of Hg or more in the blood pressure during therapy. The other 6 patients showed less reduction than this but they experienced a considerable degree of symptomatic improvement.

The alseroxylon was mildly hypotensive and produced few side effects. It produced mild sedation, bradycardia, and an improved sense of well-being. Previous studies had indicated that if the period of therapy was 3 to 6 months there was no difference between reserpine (a single alkaloid) and alseroxylon. In the current study, alseroxylon produced as much effect after therapy for one year as it did initially. Therefore, tolerance to the drug does not develop.

In patients with moderately severe to severe hypertension, alseroxylon alone is frequently inadequate. Hexamethonium and alseroxylon were given to 66 patients. The initial dose of hexamethonium was usually 125 mg. given four times a day and then increased until optimal results were obtained. Therapy was continued for one year or more. Eighty-nine per cent maintained a 20 mm. Hg or greater reduction in upright mean blood pressure and about half of the patients became normotensive. The authors found that the blood pressure reduction with combined therapy was greater in degree and more stable than with hexamethonium alone. In addition, the combination of alseroxylon with hexamethonium decreased the incidence and severity of side reactions.

Failure in Duodenal Ulcer Therapy. Phibbs, B. *GP 10:99* (Nov. 1954). The author analyzed a series of 100 cases of duodenal ulcer which had been classified as therapeutic failures. The results indicated that failure could be related to a variety of causes. First, antacids had not been administered frequently enough and/or at too low a dosage. The author emphasized that it is necessary to continuously neutralize the acid gastric secretions until healing can occur. Second, night feedings had not been forbidden. No food should be taken after the evening meal, which should be small, in order to prevent the rise in acid secretion later in the night when no antacid medication is being taken. Third, acid stimulants had not been prohibited. Alcohol, caffeine and smoking were the worst offenders. Fourth, dietary instruction had not been adequate. It is essential to prepare a written diet guide for the patient. Fifth, therapy had consisted only of anticholinergic drugs. Such therapy alone is not adequate. Sixth, exclusion or minimizing of therapy with an almost total emphasis on psychological factors. While psychological factors are important and must be treated, they must not be considered to the exclusion of the physical factors.

The author stated that he felt that there is no such thing as a duodenal ulcer which is incurable by means of a proper medical regimen. The failures occur as a result of inadequate application of therapeutic measures by the physician or inadequate cooperation on the part of the patient. The regimen proposed by Sippy some 40 years ago has not lost its efficacy, it has simply not been applied.

BOOK REVIEWS

Hospital Formulary of Selected Drugs. By Don E. Francke. The Hamilton Press, Hamilton, Illinois, 1954. xvi + 759 pp. Price $5.00.

This formulary has been prepared by the well-known hospital pharmacist Don E. Francke of the University of Michigan Hospital for the purpose of serving as a readily accessible reference of helpful information for members of the hospital staff. The author has certainly achieved this objective in a most satisfactory manner.

The drugs listed in this formulary are presented according to pharmacological and therapeutic classification. Included under the section for each agent are statements on its chemistry, actions, uses, side effects, dosage, and dosage forms.

There are twenty-eight chapters and an excellent index included in this formulary. The first twenty-four chapters deal with therapeutic agents and the last four include general information on prescription writing, conversion tables, biochemical tables, and antidotes and treatment of poisoning.

The antibiotics are discussed in great detail in several different chapters; namely, the chapters dealing with anti-infective drugs; eye, ear, nose, and throat preparations; and skin and mucous membrane preparations. Of great interest is the chapter entitled "Diagnostic Agents"—not only are the agents thoroughly described, but their dosages and the principles of the tests in which they are utilized are well defined. Also especially well prepared are the chapters entitled: "Electrolyte, Caloric and Water Balance", "Hormones and Synthetic Substitutes", and "Skin and Mucous Membrane Preparations".

The author has designated official drugs as they will appear in the new revisions of the *United States Pharmacopeia* and *National Formulary*. Drugs which are included in the Fifteenth Revision of the U. S. P. but not in the Fourteenth Revision are identified as U. S. P.[15]. Those not included in the Ninth Revision of the N. F. but scheduled for inclusion in the Tenth Revision have been designated as N. F.[10]. Designations are also made where the drug is listed in the N. N. R.

The author has rendered an excellent contribution in compiling this formulary. The reviewer not only recommends it to all hospital pharmacists but also to the practicing pharmacist in retail pharmacy. He knows of no other pharmaceutical work where the busy practitioner can find such an excellent compilation of therapeutic information and formulations as in this formulary.

.. MARTIN BARR

The Physician and His Practice. Joseph Garland, M.D., Little, Brown, & Co., Boston, Toronto; $5.00.

The young physician, who is about to hang out his shingle and begin a practice, should find Dr. Garland's presentation interesting, and in some cases, valuable reading material.

Many practical aspects are given which undoubtedly are not taught in the medical school. For example, a detailed list of equipment, furniture, and instruments, which the average physician will need in setting up an office plus approximate costs are listed.

In addition to being an aid in the medical phase of a physician's life, the book also tries to guide the novice in the proper methods of achieving financial success. Methods of bookkeeping, tax-saving factors, wise investment and insurance programs are among the ideas which the reader will observe. Such ideas should prove beneficial, not only to the physician, but to anyone who is beginning in a profession or business.

Very often, a physician, who is starting a new practice, or one still serving his internship or residency, is too busy to read anything other than required medical literature. However, Dr. Garland overcomes this obstacle by presenting the book in such a fashion as to provide easy reading for the physician's wife. In fact one chapter is devoted to the wife.

If I were a newcomer to the medical profession, I would definitely want to have this book in my library.

R. LANTOS

American Journal of Pharmacy

The American Journal of Pharmacy is the oldest continuously published scientific periodical of its kind in America, having been established by the Philadelphia College of Pharmacy in 1825. After the original issue there were three other preliminary numbers until 1829, when regular publication began. From then until 1852 four issues were published annually, with the single exception of 1847, when an additional number appeared. Six issues a year were printed from 1853 to 1870, at which time the Journal became a monthly publication.

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